

Matching Relationship Between Strategic Objective and Policy Theme of China's Pension Policy: Based on Text Analysis From 1978 to 2019

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ABSTRACT

This paper used text mining to analyse matching relationships between the strategic objective and policy theme in different stages since 1978. It is found that the systematization of pension policy system is increasing by degrees with the strategic objective gradually clear. However, there are insufficient vertical pension planning, insufficient matching of strategic objectives and policy themes, and insufficient completeness of policy themes that meet pension system construction needs. These problems have affected the achievement of strategic objectives. Therefore, three suggestions are proposed in order to optimize the top-level design of the pension policy in the 14th Five-Year Plan Period (2021-2025). First, enhancing systematism of strategic objectives. Second, strengthening the compliance and matching of the pension policy to strategic objectives. Third, improving the completeness of the pension policy system.

Keywords: *pension policy, strategic objective, policy theme, text analysis, LDA*

1. INTRODUCTION

With the rapid development of China's aging population, elderly care has become one of the essential livelihood issues concerning the overall development. As the 14th Five-Year Plan Period is approaching, summarize rules and problems in previous pension policy system systematically can targeted optimize the policy system. Since China's reform and opening-up, the government has promulgated various pension policies in accordance with the actual situation and long-term strategic objectives, hoping to solve social problems effectively. However, judging from policy evolution, pension policy output lacks systemicity, coordination and operability, especially policy themes has not accurately reached the requirements and value demands of strategic objectives, which becomes an institutional obstacle to the development of China's aging cause and related policies. Therefore, this paper will analyse the matching relationship between pension policy themes and strategic objectives to advance policy suggestions to improve institutional foundation, actively responding to population aging during China's 14th Five-Year Plan period.

Scholars' research on aged plan and policy can be roughly divided into three aspects. First, analysing the action logic and implementation deviations when implementing pension policies of the local governments. Based on the revised fuzzy conflict model, local government chose to follow the administrative execution process to implement socialized pension policies (Hu Yefei, 2015) [1]. Wang

Junqiang, Li Bing (2018) found there have multi-dimensional dilemmas between aged care service supply and demand in grassroots practice [2]. Second, exploring evolutionary characteristics and changing paths of pension policies. Wang Bo (2018) summarized three characteristics in China's pension policies since 2000, including forming a policy network, diversification of policy issues, and tending to Internet plus initiative [3]. Zhao Xianghong (2017) analysed the development orientation and demands in the top-level design of pension policies from keywords, service subjects, and target groups [4]. Wu Bin, Tang Wei (2018) find out hot spots of pension policy research with Citespace [5]. Third, innovating and reconstructing a systematic and coordinated pension policy system. Shen Suyan, Li Fang (2010) analysed contradictions and conflicts affecting the effective operation of rural pension policy system with system coordination framework [6]. Wang Aiping, Zhang Jing (2013) proposed policy recommendations for coordination between urban and rural areas and between different regions from fairness and efficiency [7]. While designing the policy system, strategic objectives need to be considered. Lei Xiaokang, Wang Jing (2020) analysed smart health care's realization path from strategic objective, system structure and action agenda [8]. The policy system includes strategies, plans, institutions, and operational policies [9]. In China's policy system, the strategic plan is goal-oriented [10]. For example, the Five-Year Plan for the Development of the National Aging Cause and the Construction of the Pension System (hereafter referred as aged plan). The top-level design and strategic intent of aged care can be reflected in strategic objectives. The old-related policy is the legal basis for

implementation, of which content includes the central tasks and specific measures formulated to achieve the Five-Year Plan. In this research, we call it policy theme. The relationship between policies and objectives, as well as overall effect of policy system must be considered when evaluating.

However, insufficient attention has been paid to the relationship between pension policy theme and strategic objective in existing research, let alone the relevance in the time series dimension. The policy text can reflect the strategic intent of policymakers' decision-making deployment and reflect the government's functions at a certain stage. Therefore, this article summarizes the pension policy's characteristics in different phases since 1978 through text analysis. We will then analyse the matching relationship between strategic objectives and policy themes, and identify obstacles that affect policy coordination. Finally, specific recommendations to formulate a pension policy system in the 14th Five-Year period will put forward.

2. METHOD AND DATA

2.1. Data Selection and Analysis Unit

In this article, the strategic objectives are main goals that the government hopes to accomplish during the Five-Year Plan period. The 8th Five-Year Plan period (from now on referred to as the 8th period) and before, it is extracted from the Plan of Economic and Social Development; after then, it is extracted from aged plan. There are 9 documents in total.

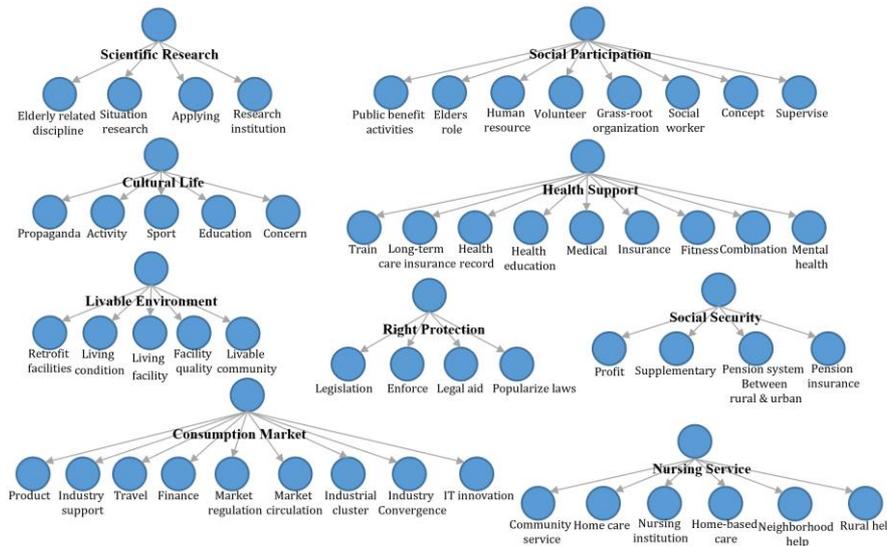


Figure 1. Strategic objectives of the development period.

Secondly, as for extracting policy theme, the method is to combine Latent Dirichlet Allocation topic (LDA) model and Global Vectors for Word Representation (Glove) model to mine from the full text of large-scale policies.

As for the pension policy, the data is downloaded from the website of the Chinese State Council, Central Ministries, and Pkulaw. Search Terms are “laonian”, “yanglao”, “yanglaofuwu”, “laoling” and “laoren” (in Chinese). The limitation start time is from December 1978 to December 2019. Then web crawler tool is used to download full text of relevant policies. A pension policy text database is established after filtering irrelevant or repeated ones, which totally has 267 effective policy texts.

The unit of text analysis is Five-Year Plan period. Because the formulation of the 5th Five-Year Plan was delayed, we combine text of 5th and 6th period together for analysis.

2.2. Research Method and Procedure

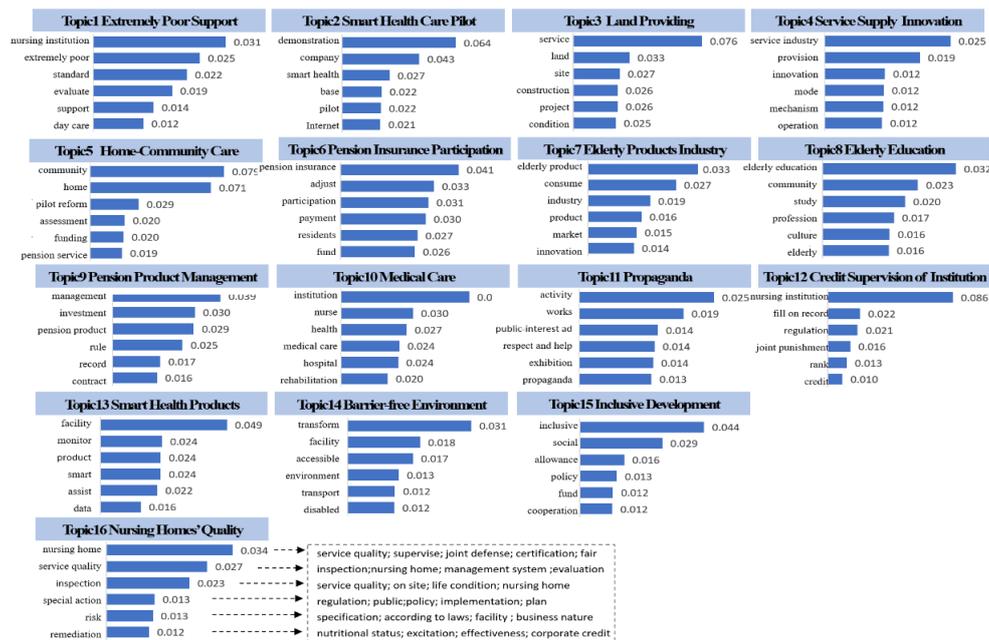
The overall research framework is composed of strategic objective induction, policy theme extraction and matching relationship analysis. Accurate identification of strategic objectives and policy themes is the premise of analysis. Considering differences of amount and content structure, this article attempts to combine Grounded Theory and data mining methods.

First of all, as for strategic objective induction, using QSR Nvivo11 to code layer by layer based on Grounded Theory, which is followed by the idea of “content extraction-induction-conceptualization”. Because content structure of plans are similar. 11 objective nodes are summarized: Social Security, Nursing Service, Health Support, Livable Environment, Consumption Market, Cultural life, Right Protection, Social Participation, Scientific Research, Government Mechanism and International Cooperation. Take development period as an example, see Fig.1.

Due to a large number of pension policy texts with complex sentence structures, and types include opinions, notices, approvals, letters, etc... LDA topic model can display the text topic structure and its distribution while

reducing the semantic dimension [11]. It is currently a relatively mature topic analysis model. There have been many studies on the quantitative analysis of policy texts. Lang Mei (2018) used LDA to process the normative documents of 14 cities in Gansu over the past ten years and aggregated the themes of municipal government functions to reveal the internal logic of functional changes [12]. However, the result of LDA is presented in the form of keywords, which is the smallest structural form of the sentence. It is difficult to precisely explain China's aged plan and policy with LDA model alone. Therefore, the Glove model is introduced to extract the words with the highest semantic similarity of the probability appearing simultaneously in the context of each keyword. This

method does not need to manually label the corpus in the early stage, which reduces the subjective intervention during pre-processing. At the same time, it makes the word vectors contain more semantic information. The steps are as follows: data pre-processing such as word segmentation and denoising; according to the defined noun extraction rules, use RStudio to extract keywords (display the first six keywords of each topic); based on the co-occurrence matrix and Glove, extract four words with the highest probability ratio of each keyword appearing simultaneously in the set context window; based on the keywords and co-occurring words, clustered topics are named. Take the 13th-period analysis as an example, and the result is shown in Fig. 2.



The results of co-occurring words are based on topic 16. In the dotted box, they are words with the highest semantic similarity to each keyword.

Figure 2. Policy themes during the development period

Finally, compare the strategic objectives and policy themes extracted in each period.

3. ANALYSIS ON EVOLUTIONARY STAGES OF MATCHING RELATIONSHIP

3.1. Separation Mode in the Early Period (1978-1985)

Through text analysis, seven strategic objectives are extracted: Social Security, Nursing Service, Cultural Life, Social Participation, Health Support, International Cooperation, and Scientific Research. Although the government was aware of the importance of aging change, it had not systematically investigated the current situation in China. The strategic objectives were relatively scattered

and obscure. Four clustered policy themes were also scattered in the Pension Insurance, Elderly Propaganda, International Cooperation, and Elderly Health.

By comparing strategic objectives and policy themes at this stage, it is found that, the formulation was discrete. The Cultural Life objective is matched with the theme of Elderly Propaganda, without involving elderly sports activities. At this stage, the macro development goals and policy formulation of China's pension policy were still in the initial stage of exploration. The policymaker was the National Aging Committee that was just established in 1983. It had little influence and policy effectiveness. Besides, China's government information transmission mode is still multi-level, linear single-channel. The feedback information channels from grassroots government are limited and easy to omission [13].

3.2. Focus Mode in Socialized Reform Period (1986-1995)

Three strategic objectives are extracted as Social Security, Nursing Service, Health Support. With the reform of China's economic system and administration, the national-unit security system under the government's responsibility and "danwei" [14] need to be transformed. Strategic objectives were focused on the security reform and the elderly welfare, forming an objective network of supervision, management, and standards. Although objectives were inherently consistent, it is undeniable that the objectives were not comprehensive, ignoring the elderly needs in other areas.

From the policy text, four policy themes are clustered in 7th period, namely Enterprise Pension Insurance Fund, Fund Collection Management, Pension Insurance Fund Pooling, Pension Insurance Fund Account Management. Seven policy themes are classified, namely, Pension Insurance Payment Standards, Enterprise Pension Insurance Reform, Pension Insurance Management, Employee Pension Insurance Premiums, Rural Pension Insurance, Pension Insurance Fund Supervision, and Government Mechanism. It can be seen that the policymaker was focused on the socialization of pension insurance and pension fund management, and the coverage of the pension insurance system had expanded. The pension insurance system had shifted from government guarantee assistance to social insurance protection.

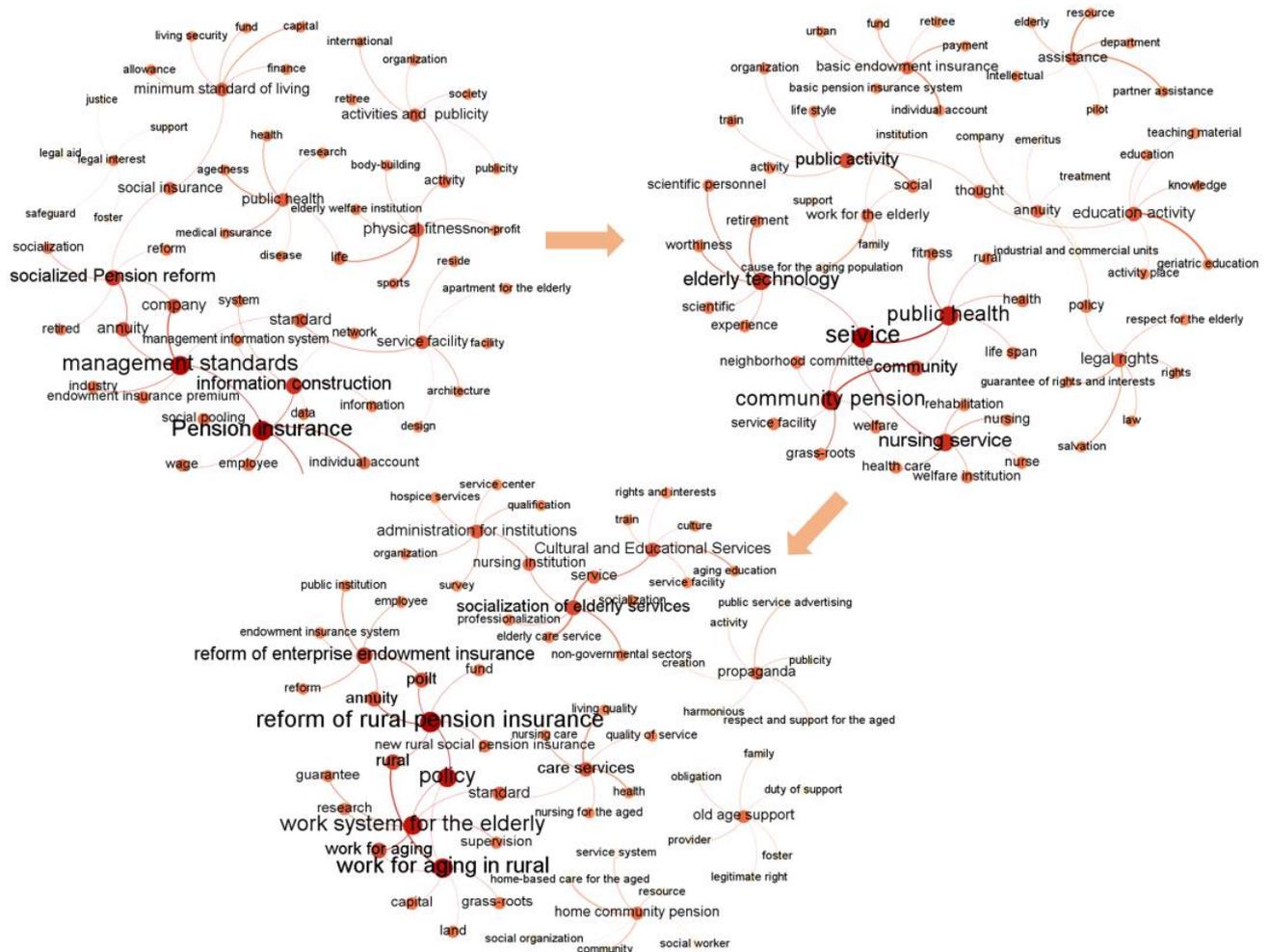
Comparing the matching relationship, it is found that the policy themes focus on a single strategic objective. The basic pension security was given priority while it limits the implementation of nursing service and health support, and they ignored social welfare facilities, social service concessions, sanitation facilities, and team building. In addition, the theme of Government Mechanism was not mentioned in the objective. The reason may be that China's second aged plan was completed in 1994 and was relatively macro. So, the objective had little impact on policy formulation during this period. Moreover, China was exploring the establishment of a social security system that is shared by the state, enterprises, and individuals. Policy resources were invested in the reform of the pension security system.

3.3. Specialization Mode in Adjustment Period (1996-2010)

Entering the specialization stage, strategic objectives had expanded from Social Security to Nursing Service, Health Support, Consumption Market, Cultural life, Right Protection, Social Participation, Scientific Research, and Government Mechanism. A target system had roughly formed including primary and secondary goals. Also adding quantifiable index data, such as coverage of nursing homes in rural towns, makes the goals clearer.

Correspondingly, the number of policy themes clustered has gradually increased. There are 10 themes in 9th & 10th period and 10 in 11th period (Fig. 3). There are four changes at this stage. First, the policy themes for Nursing Service have expanded from service facilities to Community Elderly Care, Socialization of Nursing Services, Nursing Institution Management, and Home-community Nursing, which reflecting the expansion of the coverage of the nursing service policy system. Second, social forces had participated in public nursing institutions' operation, and the government had begun to pay attention to the quality and standard of nursing services. Third, community care and home care for the elderly had become important. Fourth, on the basis of rural land pensions, China started to explore the reform of the rural social pension insurance system and establish a rural aging work institution, which was compatible with the development of a new socialist countryside and coordinated with urban and rural development.

During the adjustment period, it is partial matching between strategic objectives and policy themes. It can be seen from Fig. 3 that the policy themes are generally concentrated on social security and nursing service, accounting for 60%, 40% and 45% of the total number of policy themes in this period. The objectives of Cultural Life, Health Support, and Right Protection also have themes in some plan period, which have become key issues in policy formulation. However, objectives such as Consumption Market, Livable Environment, Scientific Research, Social Participation, and Government Mechanism lack policy theme-matching during some period.



The dark circles are policy topics; the light circles are keywords under corresponding topics.

The size of the circle represents the distribution probability under the policy topic.

Figure 3. Policy themes during adjustment period.

3.4. Reorganization Mode in Development Period (2011-2019)

Starting from the 12th period, the strategic objectives have been integrated into five interlinked components: elderly security system, elderly service system, social participation, culture life, and aging work. The objectives cover Social Security, Nursing Service, Health Support, Consumption Market, Livable Environment, Cultural Life, Right Protection, Social Participation, Scientific Research, Government Mechanism and International Cooperation (see Fig. 1). The strategic objectives were reorganized during the development period and become more systematic.

After the 12th period, the policy themes have been further expanded, and the pension policy system has been continuously improved. There are 14 themes in the 12th period and 16 in the 13th period (see Fig. 2). There are four changes during this period. First, more emphasis was

placed on grassroots autonomy in nursing services, and elderly care resources were further tilted toward home-community services. Second, China encouraged the socialization of elderly care services and explored innovations in diversified supply models to form a multi-party coordinated provision of elderly care services. Third, China paid more attention to the quality supervision of nursing institutions and the elderly care industry. Fourth, the demand for health derived from the transformation of health care service institutions. Health service products were gradually enriched, which were closely aligned with the trend of home and community elderly care and the concept of healthy.

In the development period, the compliance of policy themes to strategic objectives is increasing. Multiple policy themes are corresponding to the same objective, such as Social Security, Nursing Service, Health Support, Livable Environment, Consumption Market and Right Protection. The specific pension policy system is gradually constructed and perfected according to the objectives. However, some objectives including International Cooperation, Social

Participation, Scientific Research and Government Mechanism are only covered by high-frequency words, and the corresponding policy themes are missing.

4. PROBLEMS ANALYSIS

By comparing the topics and coding information in each plan period, the matching relationship between strategic objectives and policy themes is drawn, see Fig. 4. Although the matching relationship is becoming more and more ideal, it is also found that there are shortages that need to be improved in both aged plan and policy, which are embodied in the following three aspects.

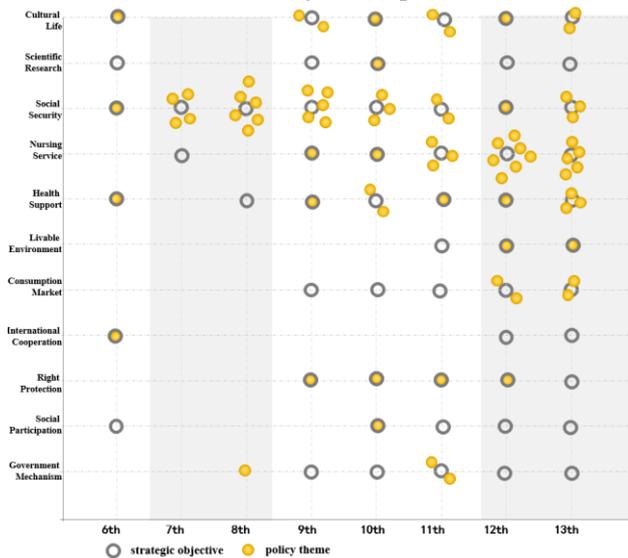


Figure 4. Relationship between objectives and policy themes in each period.

4.1. Insufficiency Systematism of Plan at Vertical Level

From the perspective of the evolution of vertical objectives, the aged plan is not systematic, which is manifested in the anticipation, continuity, and internal consistency of the aging situation. First, the general rapid aging situation and social pension problems were insufficiently predicted during the formulation of the strategic objectives. In particular, before the 12th period, the government focused on solving people’s unresolved demands in the previous stage, and it is difficult to take new needs into account. The legal rights of the elderly were vulnerable to infringement. Second, some objectives were missing in the continuation phase, such as Social Participation, Scientific Research, Cultural Life and International Cooperation. Third, the internal consistency of objectives need to be improved, manifested as relatively vague and fragmented at early period, lack of pertinence and operability during the adjustment period, and weak correlation between targets.

4.2. Insufficient Matching at Horizontal Level

There is insufficient matching at the same stage from the perspective of matching strategic objectives and policy themes at the horizontal level. Due to the relatively lagging policy formulation, or the lack of attention to certain strategic objectives, the mismatch will directly affect the realization of overall strategic objectives. It can be seen from Fig. 4 that the policy themes do not fully cover the strategic objectives at each stage. One is that some strategic objectives do not correspond to policy themes. The second is that the number of themes under certain strategic objective is quite different. Social Security and Nursing Service, have more than one policy themes to match, while objectives such as Scientific Research, International Cooperation, Social Participation, and Government Mechanism do not match themes in most plan periods.

4.3. Insufficient Completeness of Policy Themes

From the perspective of policy theme evolution, the policy theme does not fully respond to the needs of the society for elderly population. It can be seen from the distribution of the number of policy themes, see Fig. 5. It is difficult to deal with complex social issues for the elderly. The pension policy themes were concentrated on fixed issues. Social security had always been a key issue of national policy. The number of related policy themes reached its peak in the 8th period. Since then, the policy focus has shifted to nursing service, health support and cultural life. Livable environment and consumption market had also become the key issues after the 12th period. And policy priorities differ in cultural life, scientific research, international cooperation, right protection, social participation, and government mechanism during the development period. At the end of 2018, the old-age dependency ratio was 16.8%. This figure was only 8% in 1982, reflecting the increasing pressure on society from the aging population’s rapid growth. There are obvious shortcomings in the development of regional aging services, government mechanisms and society participation. Moreover, the rural pension policy has only received attention in some stages, or appeared as a policy theme, or just appeared in keywords.

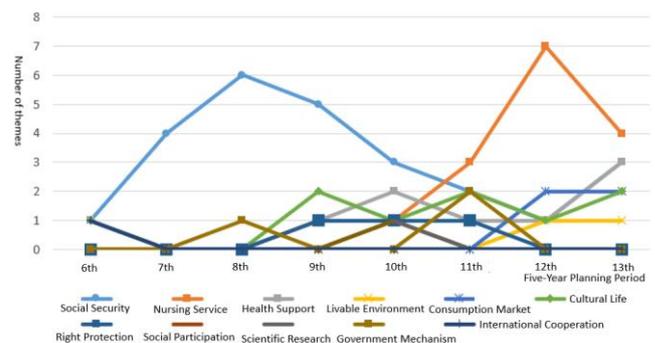


Figure 5. Distribution of policy themes.

5. CONCLUSION AND SUGGESTIONS

Through texts analysis, this article summarizes the evolution of pension strategic objectives and policy themes since 1978 into four stages: separation mode in early period, focus mode in socialized reform period, specialization mode in adjustment period, reorganization mode in development period. China's strategic objectives are gradually enriched and relatively complete, with long-term, mid-term and short-term objectives. The pension policy system is also expanding, including Social Security, Nursing Service, Health Support, Livable Environment, Consumption Market, Cultural Life, Right Protection, Social Participation, Scientific Research, Government Mechanism and International Cooperation. The response to dynamic social issues and needs has increased.

Elderly care is a long-term and sustainable basic public service issue. In the 14th period, the formulation for the elderly and the aged care system needs to be designed in the macroscopic background of society. Therefore, it is recommended to optimize the top-level design of aged plan, improve specific policy formulations from the following three aspects, and build a long-term and effective institutional framework and specific policies for actively responding to population aging.

Above all, enhancing systematism of strategic objectives. Policymakers need to accurately judge the macro-environment of aged plan which will affect the population aging in the next five years or even longer, adhere to the people-centered orientation, aim at the needs of the people, and target refine overall strategic objectives to alleviate people's livelihood concerns.

Secondly, strengthening the compliance of the pension policy to strategic objectives. Government need to comprehensively consider the feedback and survey data information of related industries, enterprises and the public, and focus on the poorly matched policy topics in the previous plan periods. For the long-standing social problems, such as pension insurance, rehabilitation care and cultural service, it is recommended to deepen, adjust, and supplement as the policy background and public needs change. Some policies are considered to be suspended or abolished due to elderly care issues are solved. There are also a small number of strategic objectives that may not be applicable to the current situation, so the relative themes need to be dynamically adjusted.

Thirdly, improving the completeness of the pension policy system. It is recommended to accurately strengthen the construction of early-stage missing themes such as Cultural Life, Scientific Research, International Cooperation, Social Participation, Right Protection, and Government Mechanism. Policymakers also need to absorb emerging policy themes to match the needs of the elderly. According to current social hotspots' actual needs, focus topics and emergencies, such as home care, housing care, health care, and mutual assistance care.

In conclusion, the aging population is the basic national condition that China will face for a long time in the future. It will also cause a series of indirect negative impacts such as increased socioeconomic pressure and changes in the

labour force structure. So, the central government must fully apply forward-looking thinking and systematic thinking to formulate a pension policy system to coordinate the relationship between social development and population aging.

ACKNOWLEDGMENT

This work was supported by the Project of Basic Research Fund of Central Universities: Research on the Effectiveness of Grassroots Social Governance Based on the People First Theory (Project No.: DUT20LAB312), and the Social Science Foundation of Liaoning Province of China: Research on the Effectiveness and Realization Path of Grassroots Social Governance in Liaoning Province Based on the People First Theory (Project No. 20211slybkt-057).

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